

Claims

1. A retrieval catheter for retrieving from a bodily lumen a device attached to the distal end of a pull line, the catheter having a wall that defines a catheter lumen and a distal tip that is tapered towards an open distal orifice that defines the distal end of the lumen, the wall over the length of said tapered tip being distensible to allow the orifice to expand, the catheter having:

a distender within the lumen that can be urged distally along the lumen such that the distender presses radially outwardly the catheter wall within the distal tip, so as to distend said orifice;

the distender having a distal end annulus and a proximal end annulus separated by a radially outward-facing circumferential wall and an axial lumen extending through the distender between said distal and proximal annuli;

a pusher shaft that extends from the distender proximally along the catheter lumen to proximally beyond the proximal end of the catheter lumen and that is arranged to push the distender distally until the distal end annulus is distal of the catheter distal orifice and the open distal orifice of the catheter is distended;

whereby, with said pull line extending from the device to be retrieved through the lumen of the distender and the lumen of the catheter, the device can be pulled proximally by the pull line relative to the catheter until at least the most proximal part of the device slides over the distal end annulus of the distender into the lumen of the distender.

2. Catheter as claimed in claim 1 and capable of aspirating material from the bodily lumen distal of said catheter tip.

3. Catheter as claimed in claim 2 including a distal aspiration port in the wall of the catheter adjacent or within said distal tip.

4. Catheter as claimed in any one of the preceding claims and which is an over-the-wire catheter.
5. Catheter as claimed in any one of the preceding claims and which is a rapid exchange catheter, with a proximal guidewire exit port remote from the proximal end of the catheter.
6. Catheter as claimed in claim 5 including a proximal aspiration port in the wall of the catheter distal of said guidewire exit port.
7. Catheter as claimed in any one of the preceding claims including a guide catheter with a lumen to receive the retrieval catheter.
8. Catheter as claimed in claim 7 wherein the guide catheter has a tapered distal end portion and the retrieval catheter is a snug fit with a distal end orifice of the tapered end portion of the guide catheter.
9. Catheter as claimed in any one of the preceding claims wherein said distender comprises radiopaque material and serves as a radiopaque marker.
10. Catheter as claimed in any one of the preceding claims wherein the catheter wall includes adjacent said distal tip an annular radiopaque marker.
11. Catheter as claimed in any one of the preceding claims wherein the distender comprises an annular distender ring and a frusto-conical annular element co-axial with said distender ring and with its larger diameter end contiguous with said distender ring, and extending proximally from the ring.

12. Catheter as claimed in claim 11 wherein the distender ring is made of radiopaque material.

13. Catheter as claimed in any one of the preceding claims wherein the distender distal end annulus exhibits an end face transverse to the axis of the lumen of the distender.

14. Catheter as claimed in any one of the preceding claims, in combination with a device to be retrieved.

15. Catheter as claimed in claim 14 wherein the device is a lumen occlusion balloon.

16. Catheter as claimed in claim 14 wherein the device is a filter for filtering passage of bodily fluid within a bodily lumen.

17. Catheter as claimed in any one of the preceding claims wherein said distender comprises a stainless steel tube.